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(71) Applicant (for all designated States except US): WAVE HOLDINGS LIMITED [BS/BS]; Offshore Group Chambers, P.O. Box N-341, Nassau, New Providence (BS).

(71) Applicant (for SD only): WHITE, Martin, David [GB/GB]; 57-60 Lincoln's Inn Fields, London WC2A 3LS (GB).

(72) Inventor; and

(75) Inventor/Applicant (for US only): FIELD, John, Desmond [AU/CN]; 97 Nam Wan Street, Peng Chau, Hong Kong (CN).

(74) Agent: WHITE, Martin, David; Marks & Clerk, 57-60 Lincoln's Inn Fields, London WC2A 3LS (GB).

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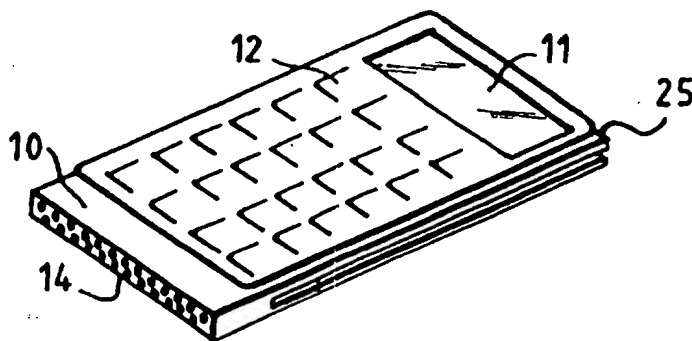
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(54) Title: POCKET VALUE TERMINAL

(57) Abstract

A pocket value terminal comprises a pocketable case (10), a display (11) and a keyboard (12). The case is designed to receive and electrically connect with contact chip cards to carry out various transactions. The case has a multi-pin connector (14) enabling the terminal to be connected to external devices. The central microprocessor may be mounted on a plastic board that also carries a contactless chip. Alternatively, the contactless chip may be mounted on a separate board and held and supported in convenient proximity with the terminal. In this way the terminal acts as a value transfer and communicating device, and can also be used, in contactless mode, to purchase rail journeys and the like.



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POCKET VALUE TERMINAL

The invention relates to a pocket value terminal that is associated with electronic transaction cards that incorporate a memory, frequently known as smart cards or chip cards, and associated hand-held devices.

The cards consist of a thin rectangular section (typically 85.6 mm x 53.98 mm x 0.76 mm) of plastic material into which is imbedded an integrated circuit which contains complex memory and logic circuits, that operate according to various ISO standards and enable the user to conduct a commercial transaction with a service provider. Such integrated circuits are referred hereinafter as "chips".

Various technologies are used for bi-directional communication with the Smart card chips, two of these methods are known as "contact" and "contactless".

Contact chip cards are supplied with contact pads on the surface of the card that are bonded to the chip. It is via a physical electrical connection to these contact pads that communication is accomplished. In contrast, communication to the contactless card chip is achieved

remotely via a radio frequency signal transmitted from an external reader, typically over a distance of around 6 to 10 centimetres. Signals are received via a tuned thin wire aerial in the form of a multi layer loop imbedded in the periphery of the chip card and connected to the chip.

The invention can be applied to any number of chip cards utilising the aforementioned technologies and other associated hand-held devices. Such cards can encompass many applications, typical applications would include, financial transaction cards, stored value cards for transport, telecommunications, car parking meters, identity cards and the like. Such cards are individually prepared and used and, generally stated, comprise a separate card for each function.

A multiple chip requirement could be achieved by developing a combination chip that combines various individual chip function characteristics into a single microprocessor chip. Such a combination leads to extra difficulty with respect to the management protocols of the various functions and in some cases would add greatly to the costs. In terms of mass production or otherwise, it

also involves considerable design expense because for each form of combination a specially designed chip is required.

45 Additionally because of the unproven acceptance level of the individual technologies, many service providers are unwilling to risk the success of their technology by combining with another unproven technology. This is particularly evident in the current integration efforts within the Transport and Financial sectors.

50 Industry observers expect that the migration for service providers from using separate chip cards to a possible final single combination chip card solution would require development through several stages.

Typically these stages would be:

55 Individual cards containing one dedicated chip, to a single card containing two separate chips, to finally a single combination chip combining the features of both technologies.

60 The invention addresses the need for a mechanism to enable service providers to integrate their technologies during the development phases from independent cards to a

possible combination card.

65 By providing a common interface that is both independent of the technologies and secure for each of the service providers, the long term financial, legal, operational and technological concerns related to the integration of their services can be addressed.

70 Typical commercial issues with respect to, ownership of the card, what powers does the owner have over the data stored on any single application, and who is responsible for establishing the data structures and security mechanisms need evaluation, these and the economic benefits from shared ownership can be carefully considered
75 before committing to the combination chip architecture.

There exists today various hand-held devices in everyday use, these may take the form of a pager, mobile telephone, calculator, electronic wallet, organiser, card value reader, or the like. These devices typically
80 incorporate features such as, a display, input interface, printed circuit board and a processor. The cards relating to this invention, and the associated

hand-held devices can be regarded as having their
respective communication, memory and processing features
85 concentrated in electronic modules mounted on either
plastic cards, or printed circuit boards.

In any event and broadly stated, each of the chip cards
relating to this invention can be regarded as a simply
suitable encapsulation of a chip and other components as
90 applicable. The encapsulation ensures the integrity of
the chip, and its components, and allows such chip cards
to be manually handled and, where appropriate,
electrically "plugged in" to a device or appliance or
simply placed in a slot, e.g. for a financial
95 transaction device inserted in a cash dispenser slot.

Some chip cards are remotely sensed, interrogated and
monitored using so-called "contactless technology".
Already contactless chip cards are used for railway
station entries, road toll collections and electronic
100 driving licenses, for example, where the card is simply
"shown" at a distance by a holder or mounted on a
vehicle, and automatically communicates with a

stationery reader or monitor.

105 The invention also has application with pagers, mobile
phones, calculators, electronic wallets, organisers,
card value readers and the like and may be applied to a
circuit board that carries one or more chips, and some
other electrical components where applicable. For the
110 purposes defining embodiments of the invention, any of
the chip cards and associated hand-held devices where
applicable, will be referred to as "pocketable
communicating devices" to give an indication to their
size, format and function.

According to the invention there is provided a
115 combination of two or more different discrete pocketable
communicating devices each having a respective
microprocessor chip for performing its discrete
functions, in which the devices are arranged to be
physically associated with one another, and one of the
120 devices is a contactless chip card.

Each device may have a separate chip and a single holder
or wallet provided to carry the chips physically close

to one another in association with one another.

125 Each device may comprise a separate supporting card of plastic material and a housing arranged to receive and carry the two or more cards physically close to one another.

130 In some of the devices the contactless chip card may be formed or carried on the same plastic card as the other or one of the other devices.

An aerial for the contactless device may be formed by conductors printed on the, or one of the plastic cards of the other devices.

135 One of the devices may comprise a manually operable pocket value terminal incorporating an independent microcomputer. One of the functions of the microcomputer is to communicate directly to one or more pocketable communicating devices, or to enable communications between two or more of these devices, when the devices
140 are physically placed close to the microcomputer during the communicating.

The pocket value terminal may be arranged to contain a mechanism for receiving and holding at least two chip cards in position. The pocket value terminal preferably includes a facility to communicate to and/or between at least a chip card and the microcomputer, in which case the contact chip card is electrically connected during the communication process by exposed contacts to the pocket value terminal.

The pocket value terminal preferably also has a multi-pin connection connectable to other appliances.

The housing may comprise a wallet arranged to contain the pocket value terminal.

In the combination, one of the devices preferably comprises a commonly used electrical device that fits into a person's pocket.

One of the devices preferably contains a central processor card. The central processor card may be provided with the means for communicating directly to a chip in another card physically placed adjacent the

central microprocessor card during the communicating.

A device may be arranged to contain the central processor and have a mechanisms for receiving and holding other cards with similar chips in position.

165 A chip card value reader may be provided and arranged to display the value residing in the memory of a chip card when physically placed within the device.

A holder or a wallet may be arranged to control and transfer value between various other cards physically placed adjacent the central processor, or into a common
170 access area within the central processor.

Embodiments of the invention will now be described by way of example with reference to the accompanying
175 schematic drawings in which:-

Figure 1 is an isometric top view of a pocket value terminal;

Figure 2 shows an isometric top view of a printed

180 circuit board for the device and forming a combined
central processor and contactless chip;

Figure 3 shows an isometric bottom view of the printed
circuit board for the device;

Figure 4 shows an isometric bottom view of the terminal;

185 Figure 5 shows an isometric bottom view of an ISO 7816
type contact chip card;

Figure 6 shows an isometric top view of a Mini or SIM
type contact chip card;

Figure 7 is a clip-on battery pack for the terminal;

190 Figures 8a and 8b is the pocket value terminal connected
to a Cellular Telephone handset;

Figure 9 is the pocket value terminal connected to a
PSTN telephone and modem; and

Figure 10 is the pocket value terminal connected to a personal computer.

195 Referring to the drawings, the terminal is provided in
a laminar shaped pocketable case 10, having an area
approximately equal to a normal credit card, and
provided with a liquid crystal display 11 and a keypad
12. A multiple pin connector 14, mounted at one end of
200 the case 10 enables the terminal to be electrically
connected to a flat battery pack 15 which is mounted in
a container 16 that forms a convenient support or
mounting for the case 10. Another multiple pin connector
25 is mounted at the other end of the case 10. The case
205 10 can also connect to various appliances such as a
mobile phone, or personal computer. In the latter case,
the case 10 will connect into a compatible computer
slot, preferably the 68 pin PCMCIA slot or the RS232
slot of the personal computer in a normal way. (See
210 Figure 10.)

In Figure 3, a printed circuit board 17 is mounted with
a type ISO 7816 contact chip connector 13 and a second

Mini or SIM type contact chip connector 18 into which can be inserted a Mini or SIM contact chip card 19.

215 A microcomputer 24 of the terminal mounted on the printed circuit board 17 enables direct communication with contact chip cards 19 and 22 inserted into the contact chip connectors 18 and 13. In use the chip cards 19 and 22 are programmed to communicate in a totally
220 secure manner with the terminal according to a known Mondex (trade mark) system, or other similar chip card systems.

In accordance with the embodiments of the invention, a contactless chip circuit is provided and comprises a
225 separate contactless chip 20 and an aerial 21 mounted and formed on the printed circuit board 17 respectively.

The chip 20 is totally separated from and independent of the microcomputer 24 and the aerial 21 is also electrically isolated from the microcomputer 24.
230 Indeed, as a matter of convenience to maintain overall versatility, the contactless chip card is preferably formed in a separate manufacturing or assembly operation, before the microcomputer 24 and its

components have been added to the plastic board.
235 Encapsulation with resin, for example, may however take
place after both the microcomputer 24 and the
contactless chip 20 have been mounted to the same
printed circuit board.

In figure 5, a second contact chip card 22 is shown. The
240 contact chip card 22 fits in position, opposite the
contact chip connector 13, when the card 22 is inserted
in between the rear of case 10 and the battery pack 15.
According to the Mondex system, the second card 22 may
belong to another person, and the arrangement enables,
245 via a separate communication link between the contact
chip cards 19 and 22, and microcomputer 24, transfer of
cash values between the cards in accordance with the
instructions manually initiated by the keyboard 12 of
the terminal. In this way, cash can be transferred,
250 typically cash for goods and services, between two
persons. As mentioned earlier, these arrangements
allowing secure transfer of cash values between two chip
cards are already known as such.

In terms of embodiments of the invention, the described
255 arrangement represents a typical example, where the
contactless chip card is used for example for purchasing
rail journeys or ticketless flight reservations. The
user of the described device can carry out transactions
using a contact chip card, such as obtaining cash at a
260 cash dispenser or transferring money to another like
card holder, these value or data transfers can also be
effected by connecting the pocket value terminal to a
Cellular Mobile Phone, as shown in Figs 8a and 8b,
enabling the transfer between the contact card inserted
265 in the pocket value terminal and the financial
institution to be completed remotely over the digital
cellular network.

A typical cellular system would be the Global System for
Mobile communications (GSM) utilising the Short Message
270 Service and Over The Air data transfers possible under
Phase 2+ of the GSM Standard.

The user can also obtain information via the terminal's
display, relating to the remaining value stored on the
contact chip card or the most recent transactional data.

275 In addition, in a contactless mode, a holder may also
obtain information relating to the remaining value
stored
on the contactless chip card or the most recent
transactional data or may enter and leave a railway
280 station, or board an aircraft without the need for a
conventional airticket . The contactless chip feature
may also be devised and used as an identity card for
entry to a "secure" office, for example.

Additionally, the user, when conducting transactions
285 with either the contact card or the contactless card
features of the terminal, can accumulate loyalty points
that have a predetermined relationship to the value of
his purchases with either the contact card, or the
contactless features of the terminal.

290 These points can be converted by the relevant service
provider into a value format that can be stored in a
public partition of the microprocessor 24, that is
accessible by both the contact card service provider and
the contactless card service provider, and used jointly
295 or severally by the service providers for distribution

between themselves and/or with the users.

The contactless device in the described embodiment is formed on the same plastic board that support the terminals' electronic components. In other applications the contactless device may be formed on a same printed circuit board that supports pager, mobile telephone, calculator, card value reader, electronic wallet or organiser, electronic components. On the other hand, the contactless device may be quite separate, as well as being also discrete in the manner above, and so simply placed or used in proximity with the chip boards of the other "communicating" devices, which devices include the terminal (as described) that communicates with chip cards such as 19 and 22

In any event it will be appreciated that in embodiments of the invention the contactless function is a kind of "add-on" to a communicating device, such as a pocket value terminal, say. There are at least three advantages with providing such an arrangement. Firstly, there is no need to re-design and technically prove the contact chip or the contactless chip as they are known

and generally available per se. Secondly, several different kinds of contactless chip cards can be selected and added to one of a variety of contact chip
320 cards. Thirdly, because there are no battery requirements for contactless operation, or generally, the contactless function can be provided next to a standard printed circuit of a pager, a mobile telephone, a calculator, a card value reader, an electronic wallet,
325 an electronic organiser or other devices. As such, the pager and so forth can be used for its normal function and also used to obtain entry to a railway station using the incorporated or added-on contactless chip card feature.

330 A further advantage of maintaining the chip functions separate is that it maintains privacy and security between the respective service providers and/or users.

It will be noted that the user or holder of the described device may be informed, using the
335 microcomputer 24, of the status of the value remaining on his chip card and has means of privately obtaining the most recent transactional data relating to his

cards. At present means for accessing this information
are generally located at the service provider, and in
340 many cases such information is not easily available.

Instructions relating to all the foregoing can be
carried out by the combined use of the display and key
input features of the pocket value terminal.

Other variations based on the pocket value terminal can
345 be provided to enhance its overall usefulness. The
pocket value terminal may be connected to an information
system for the transfer of data and/or value via either
of two multipin connectors provided on the terminal. In
one arrangement the pocket value terminal may be
350 connected to an information system via the 68 pin PCMCIA
connector 14. The information system could be accessed
by an appliance such as a personal computer, personal
digital assistant, or any other device that contains a
connecting slot that is compatible with the terminal's
355 68 pin PCMCIA connector and associated unique
connector alignment profile.

Alternatively the information system may be accessed by
means of a telephone network. To achieve this the

terminal is connected to the telephone network via a
360 telephone handset, which may be a mobile phone or a
special handset designed for the purpose. The most
recent of mobile digital telephones are equipped with
data transfer connection slots, to which the pocket
value terminal is connected in use by the second multi-
365 pin connector 25 located on the periphery of the
terminal, as shown in Fig 8a, the data transfers are
enabled by integrating proprietry software drivers
provided by the cellular handset manufacturers into the
pocket value terminal that are compatible with the
370 communication protocols of the cellular handset.

Alternatively the pocket value terminal can be connected
via the 68 pin PCMCIA connector 14 to mobile digital
telephones that are appearing with PCMCIA compatible
slots located at the base or side of the cellular
375 handset as shown in fig 8b.

A similar configuration is possible with a telephone
handset connected to the Public Switched Telephone
Network (PSTN) incorporating a modem designed for data
transfers, as exhibited in Fig 9.

380 In any of these data transfer arrangements the pocket value terminal contributes a significant increase in computing capacity not available to chip cards in their independent state. This increased computing power enables

385 the pocket value terminal to act as an "intelligent" partner to a relatively simple chip card, by performing the functional workload such as implementation of security measures, typically full asymmetric cryptography which demand large computing facilities.

390 A further consideration is the need for the pocket value terminal to have a sufficiently large electrical power source. This is achieved with a large capacity plug-in power pack which may be rechargeable, and is of a format that does not contribute significantly to the terminal's weight or bulk as shown in Figure 7, connection to the
395 pocket value terminal may be via the 68 pin connector 14.

Additionally, the pocket value terminal, maintains in such a data transfer configuration, the feature
400 available in previous embodiments, of being able to

accommodate several chip cards simultaneously, and to be able to communicate to or between the inserted chip cards and the information systems. This can result in the transfer of value via the communication system, typically between a chip card and a financial institution. The remaining value residing on the chip card can be read from the terminal's display, prior to the removal of the card from the pocket value terminal, and the card then used in a normal transactional manner.

In a further embodiment the pocket value terminal is used

in a communication system connectable to an interactive market, or similar virtual network. This may be via the previously described transmission systems or by mass market devices, specially designed for this interactive medium. Such devices include TV set-top boxes and Internet connecting devices. By connecting the pocket value terminal to these devices, small value payments can be transferred instantaneously from the inserted chip card for services such as pay to view movies, or specially televised sporting events. It is also possible to use the pocket value terminal for payments over the

Internet for a multitude of goods and services that are and will be available from this medium. Typically the majority of payments via these networks are 'micro-payments', being of small value and not economically transacted by conventional credit card means due to the relative high cost of the associated transaction accountability.

Instructions relating to all the foregoing connections with the communicating systems can be carried out by the combined use of the display and key input features of the pocket value terminal or the computer terminal, telephone or other connected device.

Computers and digital technology have opened new markets that require secure and swift remote payment arrangements.

Remote payments need high-levels of security to guarantee protection against counterfeit and fraud, against criminals or computer hackers, who would seek to intercept or divert value transfers between legitimate parties. It is obvious that with the potential for

exponential growth of remote payments via virtual networks, the requirement for improved security is
445 essential.

In some or most embodiments it is necessary to have a security facility. This is generally an underlying requirement for most users of cash transactions. Advanced card systems use cryptographic safeguards in
450 conjunction with personal identification of the user. Personal identification systems are generally based on three parameters associated with, something someone knows such-as a personal identification number (PIN), something that someone has, such as a badge or card, or
455 some biocharacteristic of the individual, such as a fingerprint or speech pattern.

In an embodiment of the invention the pocket value terminal with the plug-in battery pack shown in Figure 7 attached, is provided with a biometric template of the
460 card user based on his fingerprint, voice or other such data. This template is used to compare real time input of corresponding biometric data from the user, prior to the use of the card. A positive result of this biometric

comparison creates a time based link to the activation
465 of the value segments of the inserted chip card. After
removal of the plug-in power pack from the 68 pin
connector, the pocket value terminal can be inserted
into a compatible connecting slot in a personal computer
to complete the value transfer within the designated
470 period.

Alternatively the pocket value terminal with the plug-in
powerpack attached can be connected to a compatible
telephone via the multipin connector 25. The biometric
475 authentication can be carried out whilst connected to
the telephone network or independently and then
connected to the telephone network, as previously
explained.

In all cases transfers are not possible unless both the
480 user has been accepted by the biometric authentication
process, and the user's chip card is inserted into the
pocket value terminal while the pocket value terminal is
connected to the PC computer or compatible telephone.
Removal of the chip card from the pocket value terminal
485 will terminate the connection.

The action of the biometric authentication together with the unique identifier relating to the integrated circuit of the inserted chip card may also be used to produce a session key for the transaction period selected by the user during the authentication process. This session key further enhances the security that presently exists in some chip card transaction protocols. For each new log-on to the communication system a new session number is generated, and only for the period decided by the user.

Additionally the memory may be expanded for more involved biometrics by storing the biometric template on any of the emerging mini format flash memory card that can be an additional plug-in device to the pocket value terminal.

It will be appreciated that whereas a certain contactless device has been described with a chip mounted on a board and an aerial formed, by printed circuit or other technique, on the board, other contactless arrangements may be used. Such other

505 contactless arrangements included cards that are read
during proximate inductive coupling where the card is
normally presented quite closely up to or near a reader.
In all cases, the contactless device is any device that
does not actually electrically contact the reader
510 directly and is a separate or separately operable
device, as explained in the specification.

CLAIMS

1. A combination of two or more pocketable different discrete communicating devices and each having a
515 respective microprocessor chip for performing its discrete function, in which the devices are arranged to be physically associated with one another, and one of the devices is a contactless device.
2. A combination according to claim 1, in which each
520 of the devices has a separate chip and a single holder or wallet is provided to carry the chips physically close to one another in association with one another.
3. A combination according to claim 1, in which each
525 of the devices is formed on or carried by a respective single printed circuit board.
4. A combination according to any of claims 1 to 3, in which an aerial for the contactless device is formed by conductors printed on the or one of the printed circuit boards.
- 530 5. A combination according to any of claims 1 to 4, in

which one of the devices comprises a commonly used electrical device that fits into a person's pocket.

535 6. A combination according to any of claims 1 to 5, in which one of the devices contains a central microprocessor card.

7. A combination according to any of claims 1 to 6, in which the central microprocessor card is provided with the means for communicating directly to a chip in another card physically placed adjacent the central
540 microprocessor card during the communicating.

8. A combination according to any of claims 1 to 7, including a device arranged to contain the central microprocessor, the device having mechanisms for receiving and holding other cards with similar chips in
545 position.

9. A combination according to any of claims 1 to 8, including a device arranged to contain a clip-on rechargeable battery pack, to supply electrical power.

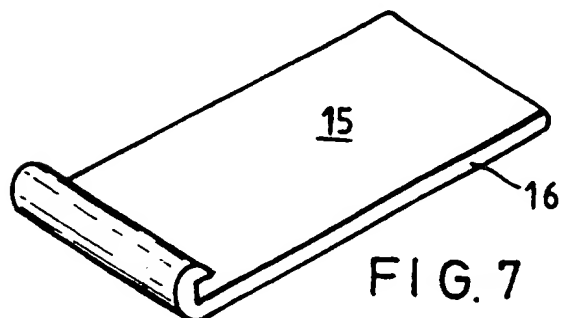
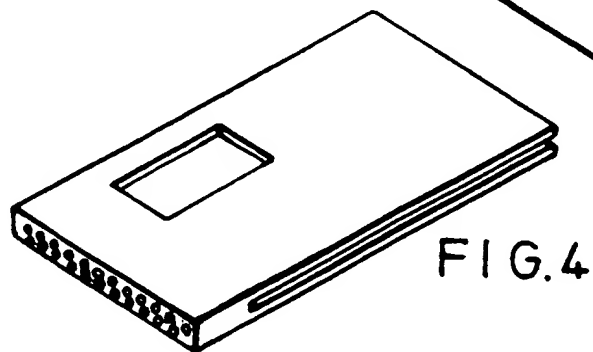
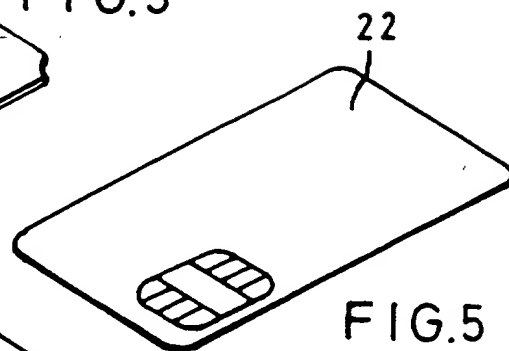
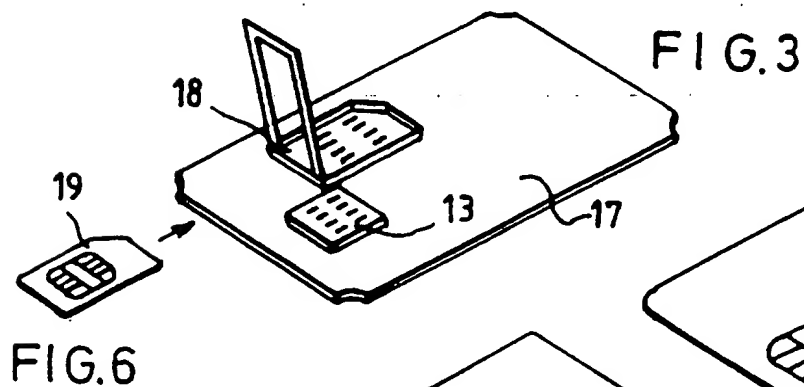
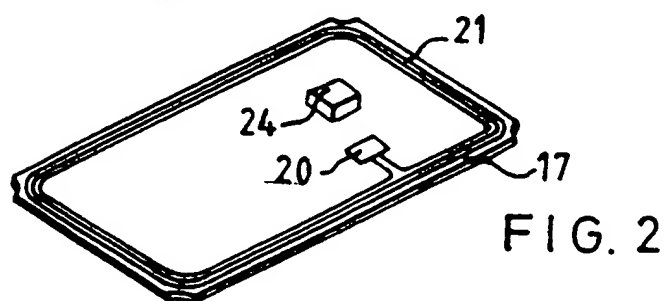
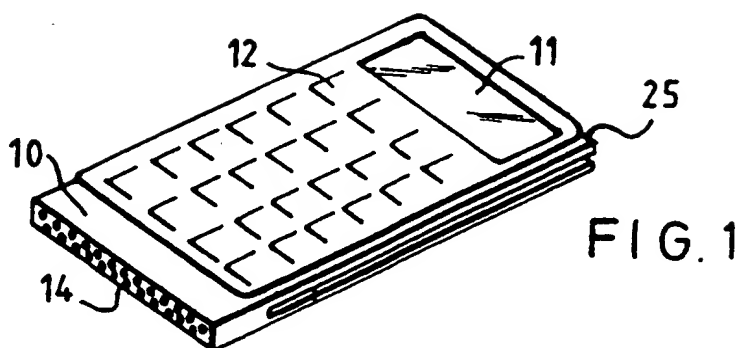
10. A combination according to claim 9, including a
550 chip card value reader arranged to display the value
residing in the memory of the chip of a card physically
placed within the device.

11. A combination according to claim 9, including a
wallet arranged to transfer loyalty value between
555 various other cards physically placed adjacent the
central microprocessor.

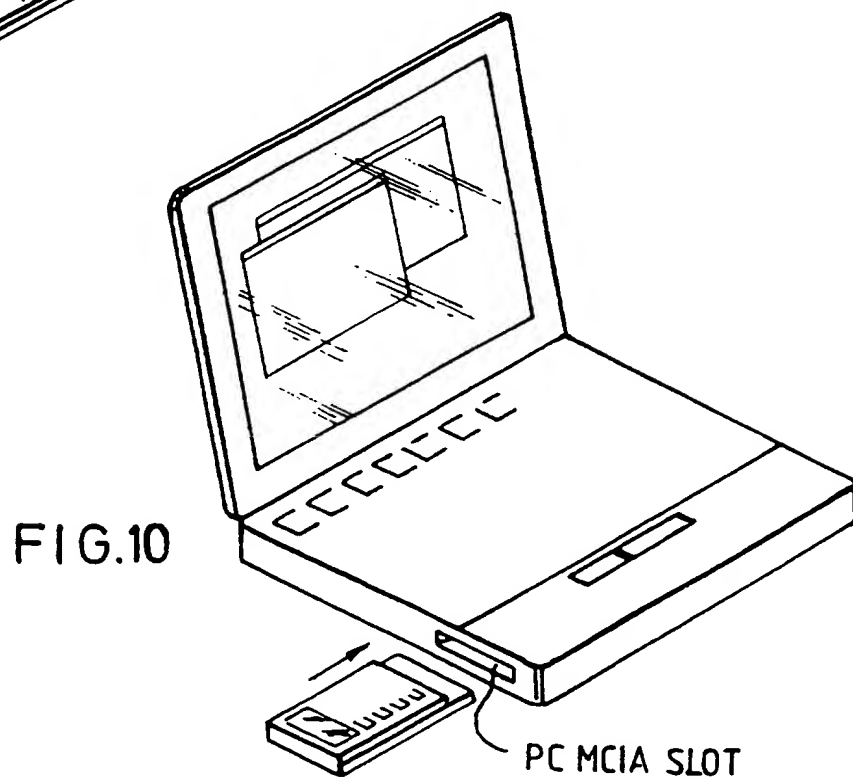
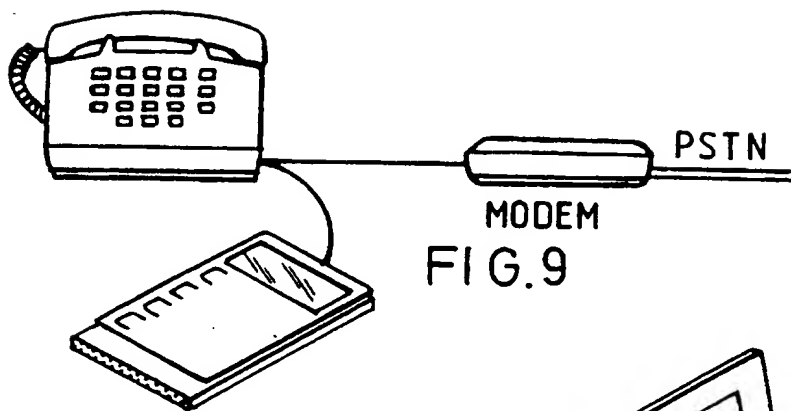
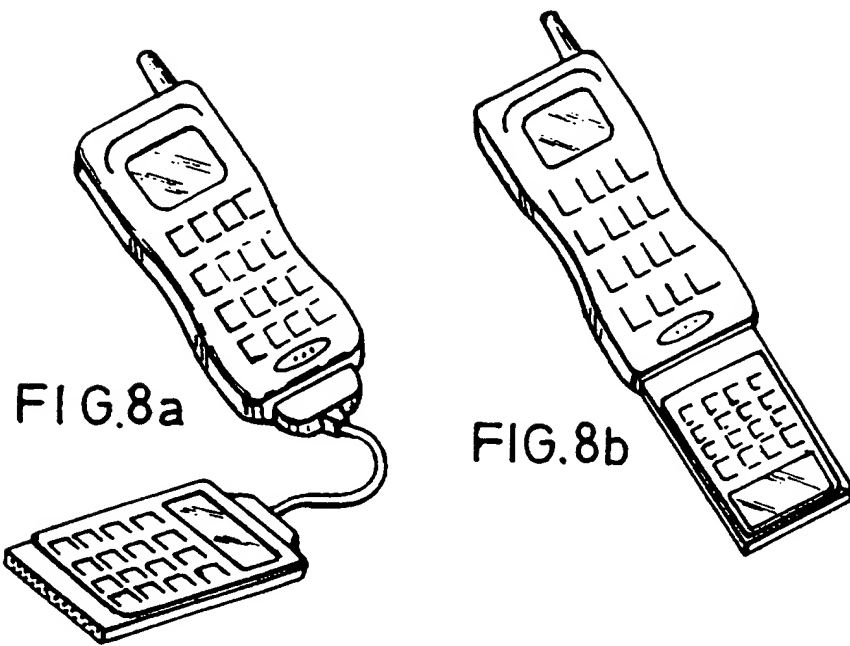
12. A combination according to claim 9, including a
connector that enables connectivity to cellular mobile
phones to facilitate the transfer of data or value via
560 the cellular network between financial institutions or
other card holders to cards physically placed adjacent
the central processor.

13. A combination according to claim 9, including a
connector that enables connectivity to personal
565 computers to facilitate the transfer of data or value
via the personal computer communication network between
financial institutions or other card holders to cards
physically placed adjacent the central processor.

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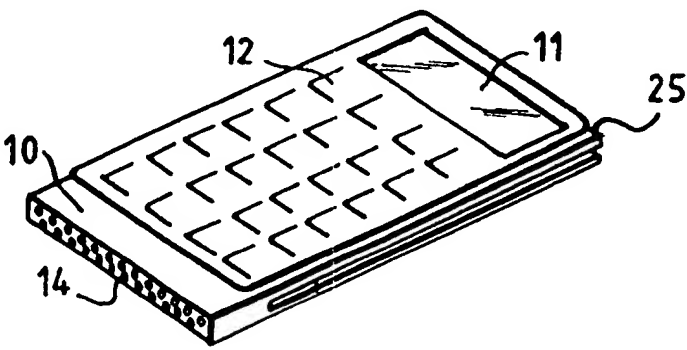


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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁶ : G07F 7/10, 19/00</p>	A3	<p>(11) International Publication Number: WO 98/12674</p> <p>(43) International Publication Date: 26 March 1998 (26.03.98)</p>		
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>(21) International Application Number: PCT/GB97/02551</p> <p>(22) International Filing Date: 18 September 1997 (18.09.97)</p> <p>(30) Priority Data: <div style="display: flex; justify-content: space-between; margin-top: 5px;"> 9619708.2 20 September 1996 (20.09.96) GB </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> 9624147.6 20 November 1996 (20.11.96) GB </div> </p> <p>(71) Applicant (for all designated States except US): WAVE HOLDINGS LIMITED [BS/BS]; Offshore Group Chambers, P.O. Box N-341, Nassau, New Providence (BS).</p> <p>(71) Applicant (for SD only): WHITE, Martin, David [GB/GB]; 57-60 Lincoln's Inn Fields, London WC2A 3LS (GB).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only): FIELD, John, Desmond [AU/CN]; 97 Nam Wan Street, Peng Chau, Hong Kong (CN).</p> <p>(74) Agent: WHITE, Martin, David; Marks & Clerk, 57-60 Lincoln's Inn Fields, London WC2A 3LS (GB).</p> </td> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> <p>(88) Date of publication of the international search report: 23 July 1998 (23.07.98)</p> </td> </tr> </table>			<p>(21) International Application Number: PCT/GB97/02551</p> <p>(22) International Filing Date: 18 September 1997 (18.09.97)</p> <p>(30) Priority Data: <div style="display: flex; justify-content: space-between; margin-top: 5px;"> 9619708.2 20 September 1996 (20.09.96) GB </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> 9624147.6 20 November 1996 (20.11.96) GB </div> </p> <p>(71) Applicant (for all designated States except US): WAVE HOLDINGS LIMITED [BS/BS]; Offshore Group Chambers, P.O. Box N-341, Nassau, New Providence (BS).</p> <p>(71) Applicant (for SD only): WHITE, Martin, David [GB/GB]; 57-60 Lincoln's Inn Fields, London WC2A 3LS (GB).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only): FIELD, John, Desmond [AU/CN]; 97 Nam Wan Street, Peng Chau, Hong Kong (CN).</p> <p>(74) Agent: WHITE, Martin, David; Marks & Clerk, 57-60 Lincoln's Inn Fields, London WC2A 3LS (GB).</p>	<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> <p>(88) Date of publication of the international search report: 23 July 1998 (23.07.98)</p>
<p>(21) International Application Number: PCT/GB97/02551</p> <p>(22) International Filing Date: 18 September 1997 (18.09.97)</p> <p>(30) Priority Data: <div style="display: flex; justify-content: space-between; margin-top: 5px;"> 9619708.2 20 September 1996 (20.09.96) GB </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> 9624147.6 20 November 1996 (20.11.96) GB </div> </p> <p>(71) Applicant (for all designated States except US): WAVE HOLDINGS LIMITED [BS/BS]; Offshore Group Chambers, P.O. Box N-341, Nassau, New Providence (BS).</p> <p>(71) Applicant (for SD only): WHITE, Martin, David [GB/GB]; 57-60 Lincoln's Inn Fields, London WC2A 3LS (GB).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only): FIELD, John, Desmond [AU/CN]; 97 Nam Wan Street, Peng Chau, Hong Kong (CN).</p> <p>(74) Agent: WHITE, Martin, David; Marks & Clerk, 57-60 Lincoln's Inn Fields, London WC2A 3LS (GB).</p>	<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> <p>(88) Date of publication of the international search report: 23 July 1998 (23.07.98)</p>			
<p>(54) Title: POCKET VALUE TERMINAL</p>				
<p>(57) Abstract</p> <p>A pocket value terminal comprises a pocketable case (10), a display (11) and a keyboard (12). The case is designed to receive and electrically connect with contact chip cards to carry out various transactions. The case has a multi-pin connector (14) enabling the terminal to be connected to external devices. The central microprocessor may be mounted on a plastic board that also carries a contactless chip. Alternatively, the contactless chip may be mounted on a separate board and held and supported in convenient proximity with the terminal. In this way the terminal acts as a value transfer and communicating device, and can also be used, in contactless mode, to purchase rail journeys and the like.</p>				
				

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 97/02551

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 G07F7/10 G07F19/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G07F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 93 02430 A (HALPERN) 4 February 1993	1-8
Y	see page 3, line 1 - page 4, line 29; figures 1-3,13,14-25B	9
A	see page 7, line 4 - page 17, line 27	10-13
Y	EP 0 670 556 A (GEMPLUS CARD INTERNATIONAL) 6 September 1995 see column 3, line 14 - column 6, line 58; figures 1,2	9
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A	see page 6, line 28 - page 9, line 26; figures 1,2	9-13
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Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

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Rivero, C

INTERNATIONAL SEARCH REPORT

Int .tional Application No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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